

# **YAMAHA C-85**

*Natural Sound Stereo Control Amplifier*

*New Continuously Variable Loudness Control*

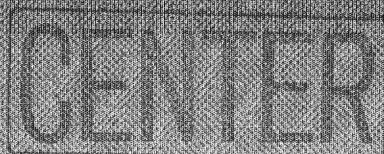
*Super Low-Noise Zero Distortion Rube Head Amp*

*Zero Distortion Rube/DC Servo/Current Noise Suppression EQ Amp*

*4-Gang Volume Control*

*2-Band Parametric Tone Control*

*Switchable MC/MM Cartridge Gain*



*Thank you for purchasing the YAMAHA C-85 stereo control amplifier.*

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## **OWNER'S MANUAL**

### **IMPORTANT**

Please check your unit's rear panel serial number and record it in the space below.

Model: **C-85**

Serial No.:

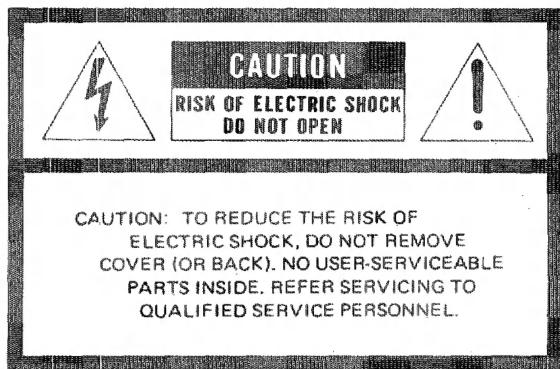
Keep this owner's manual in a safe place for future reference.

### **WARNING**

To prevent fire or shock hazard, do not expose this appliance to rain or moisture.

5.61.4.16 223TBS

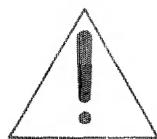
## SAFETY INSTRUCTIONS



### • Explanation of Graphical Symbols



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert you to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert you to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

- 1 Read Instructions — All the safety and operating instructions should be read before the appliance is operated.
- 2 Retain Instructions — The safety and operating instructions should be retained for future reference.
- 3 Heed Warnings — All warnings on the appliance and in the operating instructions should be adhered to.
- 4 Follow Instructions — All operating and other instructions should be followed.
- 5 Water and Moisture — The appliance should not be used near water — for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.
- 6 Carts and Stands — The appliance should be used only with a cart or stand that is recommended by the manufacturer.
- 7 Wall or Ceiling Mounting — The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
- 8 Ventilation — The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface, that may block the ventilation openings; or cabinet that may impede the flow of air through the ventilation openings.
- 9 Heat — The appliance should be situated away from heat sources such as radiators, stoves, or other appliances that produce heat.
- 10 Power Sources — The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
- 11 Power-Cord Protection — Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
- 12 Cleaning — The appliance should be cleaned only as recommended by the manufacturer.
- 13 Nonuse Periods — The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
- 14 Object and Liquid Entry — Care should be taken so that objects do not fall into and liquids are not spilled into the inside of the appliance.
- 15 Damage Requiring Service — The appliance should be serviced by qualified service personnel when:
  - A. The power-supply cord or the plug has been damaged; or
  - B. Objects have fallen, or liquid has been spilled into the appliance; or
  - C. The appliance has been exposed to rain; or
  - D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
  - E. The appliance has been dropped, or the cabinet damaged.

**16** Servicing — The user should not attempt to service the appliance beyond those means described in the operating instructions. All other servicing should be referred to qualified service personnel.

**17** Power Lines — An outdoor antenna should be located away from power lines.

**18** Grounding or Polarization — The precautions that should be taken so that the grounding or polarization of an appliance is not defeated.

**CAUTION: READ THIS BEFORE OPERATING YOUR C-85**

**1**

To ensure the finest performance, please read this manual carefully. Keep it in a safe place for future reference.

**2**

Install your unit in a cool, dry, clean place—away from windows, heat sources, and too much vibration, dust, moisture or cold. Avoid sources of hum (transformers, motors). To prevent fire or electrical shock, do not expose to rain and water.

**3**

Do not operate the amplifier upside-down. It may overheat, possibly causing damage.

**4**

Never open the cabinet. If a foreign object drops into the set, contact your dealer.

**5**

Do not place records or other objects on top of the amplifier; this will block the ventilation holes, cause the internal temperature to rise and may result in a failure.

**6**

Do not use force on switches, knobs or cords. When moving the set, first turn the unit off. Then gently disconnect the power plug and the cords connecting to other equipment. Never pull the cord itself.

**7**

Do not attempt to clean the unit with chemical solvents; this might damage the finish. Use a clean, dry cloth.

**8**

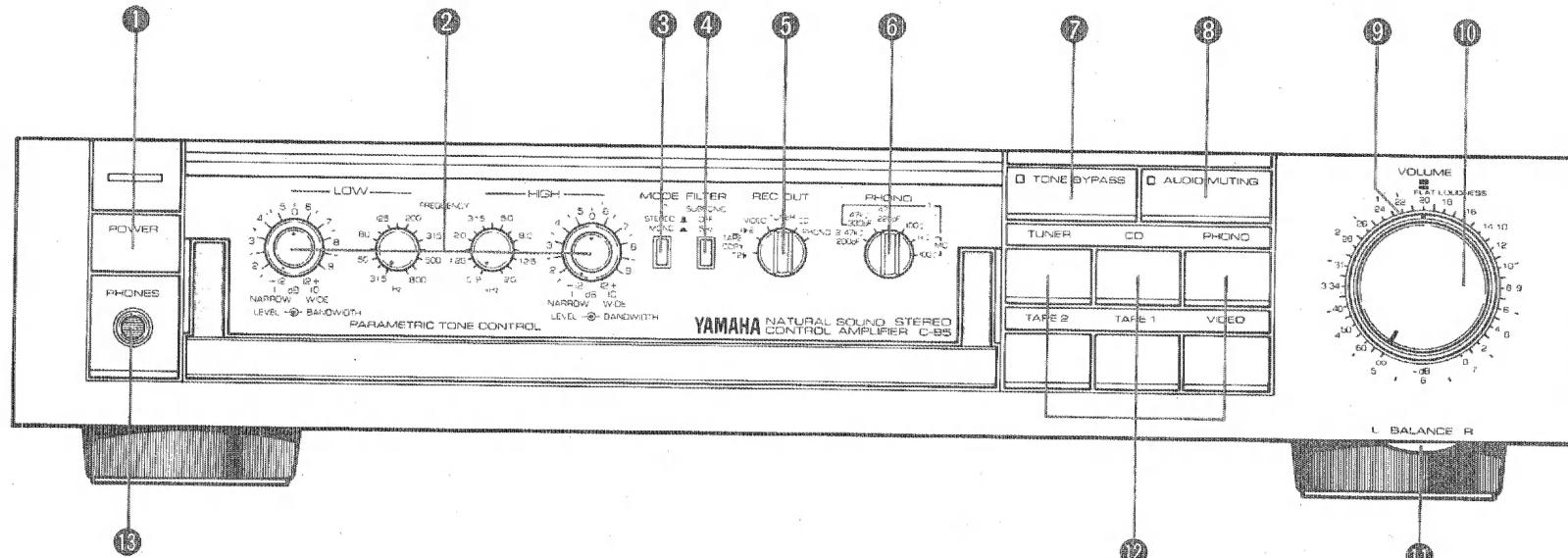
Be sure to read the "troubleshooting" section on common operating errors before concluding that your unit is faulty.

**9**

Do not connect audio equipment to the AC outlets on the rear panel if that equipment requires more power than the outlets are rated to provide.

# C-85

## FRONT PANEL CONTROLS AND THEIR FUNCTIONS



### ① POWER switch and indicator

Press to turn power on or off. When the power is supplied, the indicator above the switch lights.

### ② PARAMETRIC TONE CONTROLS

#### LOW controls

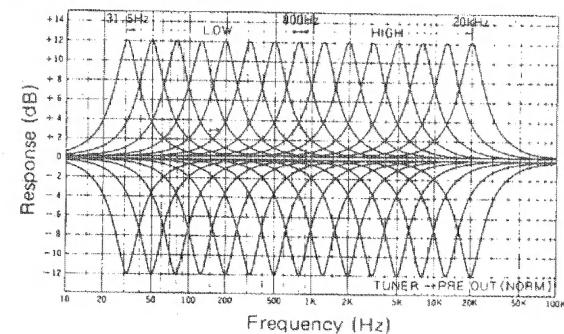
The LOW controls of the PARAMETRIC TONE CONTROLS may be used to boost or cut any frequency in the range of 31.5 Hz to 800 Hz by a selectable amount. A range of frequencies is affected, centered on the frequency selected with the FREQUENCY control. The width of the frequency range to be adjusted is set with the BANDWIDTH

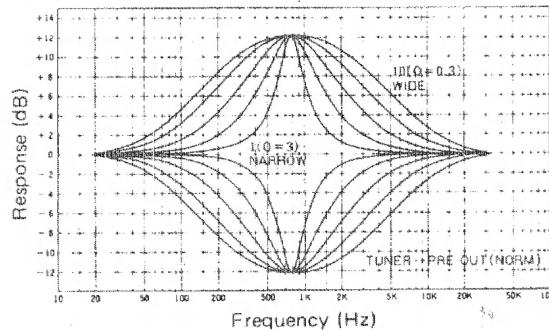
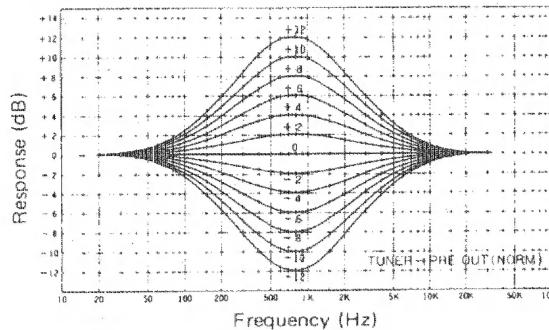
control. The amount of boost or cut is set with the LEVEL control (-12 dB to +12 dB).

#### HIGH controls

The HIGH controls of the PARAMETRIC TONE CONTROLS may be used to boost or cut any frequency in the range of 0.8 kHz to 20 kHz by a selectable amount. A range of frequencies is affected, centered on the frequency selected with the FREQUENCY control. The width of the frequency range to be adjusted is set with the BANDWIDTH control. The amount of boost or cut is set with the LEVEL control (-12 dB to +12 dB).

#### FREQUENCY control



**BANDWIDTH control**

**LEVEL control**

**③ MODE selector**

Switches between stereo and mono modes.

**④ SUBSONIC FILTER switch**

This switch cuts out ultra-low-frequency signals caused by warped records or turntable rumble. Subsonic interference drains amplifier power and can even harm speakers if not attenuated.

**⑤ REC OUT selector**

This switch selects the source for recording. Monitoring the recording source is optional: the input selector switches can be set to the same or a different source from that being recorded. If your tape deck has three-head monitoring capability, you can monitor the just-recorded signal by pressing the corresponding TAPE input selector switch.

**⑥ PHONO selector**

This selector selects the turntable and impedance. The leftmost position selects PHONO 2, which requires an MM cartridge. The five positions to the right all select PHONO 1: a choice of 3 MM and 2 MC setting is offered.

**⑦ TONE BYPASS switch and Indicator**

Press this button to engage tone bypass circuitry, which routes the input signal so that it is unaffected by the PARAMETRIC TONE CONTROL circuitry.

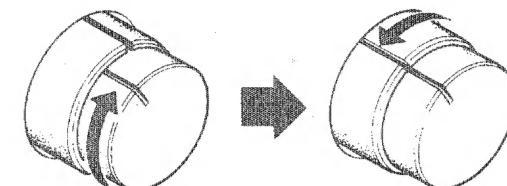
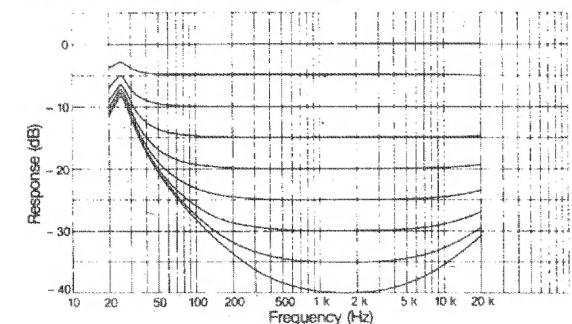
**⑧ AUDIO MUTING switch and indicator**

Press to lower the volume 20 dB without disturbing the Volume Control position. Press again to restore normal volume.

**⑨ Continuously Variable LOUDNESS control**

This control allows you to retain full tonal range at low volume levels. Your ear loses sensitivity to high and low frequency ranges at low volume settings. LOUDNESS control provides a maximum of 40 dB attenuation, employed according to an equalization curve based on human hearing.

To adjust the LOUDNESS control to your listening level, first, set the control to the FLAT position, increase the VOLUME control to your listening level, then turn the LOUDNESS control counterclockwise to reduce the volume level.


**CONTINUOUSLY VARIABLE LOUDNESS CONTROL CHARACTERISTICS**




#### ⑩ VOLUME control

Adjusts overall sound level.

#### ⑪ BALANCE control

The control adjusts the relative volume of the left and right speakers, enabling you to compensate for imbalance caused by asymmetry in speaker locations, furniture arrangement, or in the source program.

#### ⑫ Input selectors

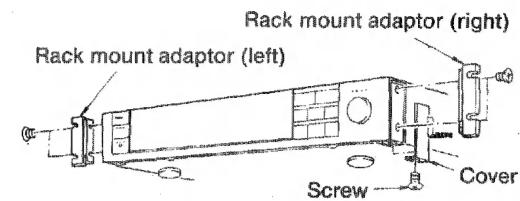
These switches select the listening source.

#### ⑬ PHONES jack

Plug in the headphones for private listening.

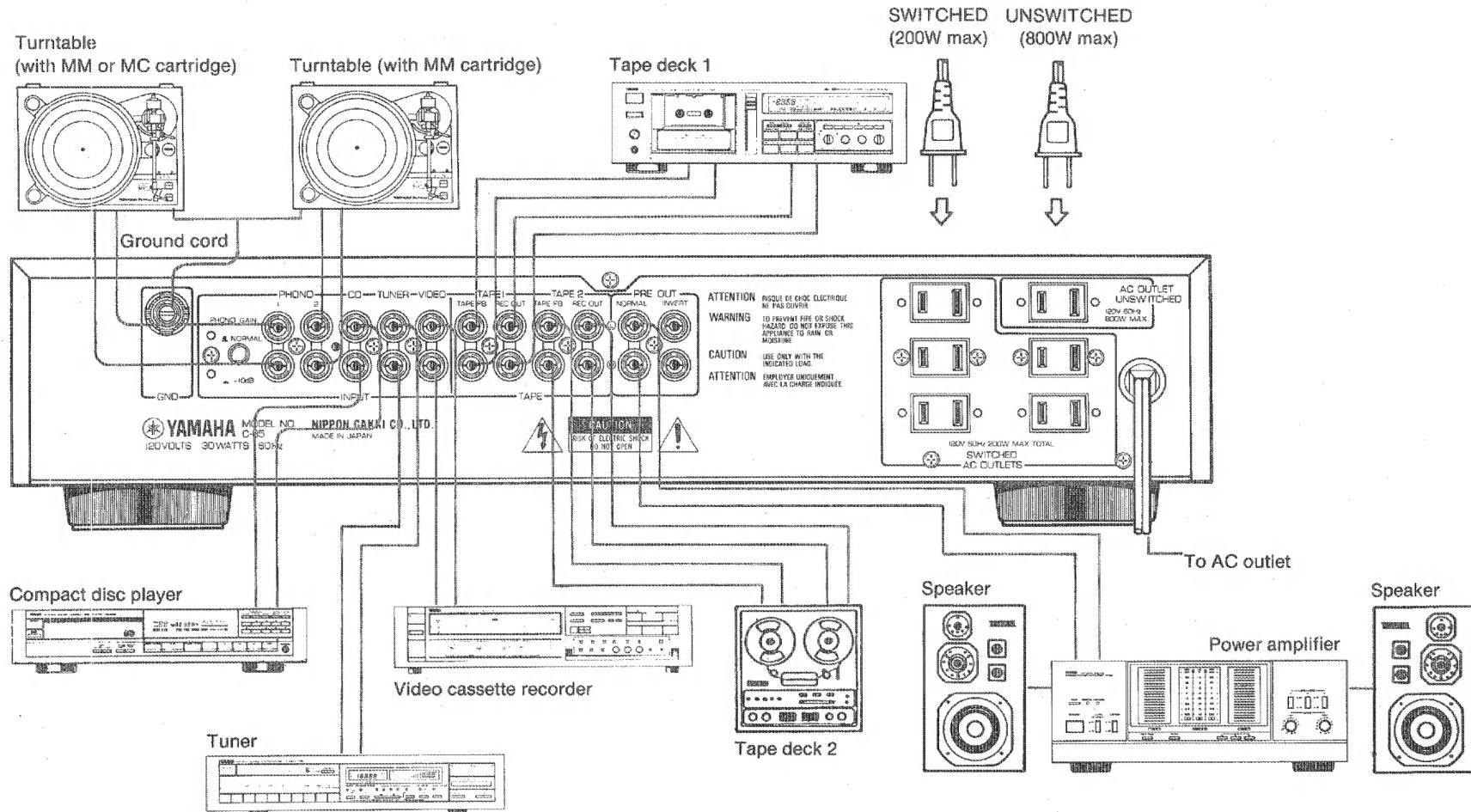
### ■ ATTACHING THE RACK MOUNTING ADAPTORS (Optional)

- 1) Remove the screws on the bottom of the unit as shown in the diagram and take off the covers which conceal the adaptor mounting holes. The covers can be removed by sliding them 5 mm down after removing the screws.
- 2) Verify that the resulting mounting centers of the adaptors will match the width of your rack, then attach the adaptors firmly with screws.
  - \* Using these adaptors allows the unit to be used with EIA standard racks.



## CONNECTIONS

Be sure to connect the left (L) and right (R) channels consistently from component to component.



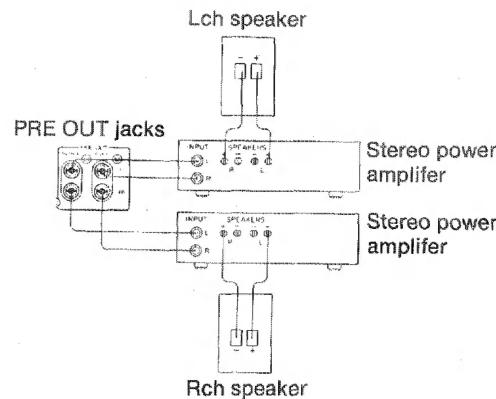


## ■ CONNECTING THE POWER AMPLIFIER

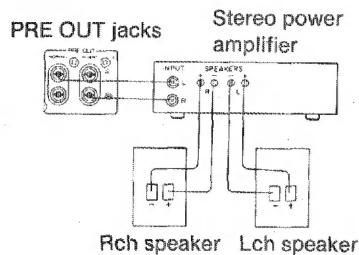
Connect the PRE OUT jacks of the unit to the INPUT jacks of your power amplifier.

When using a separate power amplifiers for each channel, make the alternate hookup as shown below. This allows you to run ordinary stereo amplifiers (those without inverting pre outs) monaurally. Power amplifier's supply capacity limits their bass response. When a strong bass note enters both channels of the power amplifier, total demand for power is high. The PRE OUT INVERT jacks can solve this problem.

This hookup places an effective load on the amplifier of only 4 ohms when 8 ohms speakers are used; therefore, care must be taken not to put excessive strain on the amplifier by operating in this way at high power levels for an extended period of time.



The hookup as shown below operates the power amplifier's left and right channels out of phase, greatly reducing the demand on the power supply and in many cases dramatically improving bass reproduction. Be sure to reverse connections to one speaker as shown, to bring output back into phase.



## ■ CONNECTING A TURNTABLE

The unit accepts two turntables. The PHONO 1 jacks can accept either an MM or an MC cartridge; the PHONO 2 jacks are for MM only. The front panel's PHONO selector selects the turntable. The leftmost position selects PHONO 2, which requires an MM cartridge of 47k-ohms (220 pF) impedance. The five positions to the right are all for PHONO 1; a choice of 3 MM and 2 MC settings is offered.

On the rear panel next to the PHONO jacks is the PHONO GAIN switch — a small red button. Use this switch to refine volume control with high output level cartridges. Press the button in to lower the output signal by 10 dB; press again to release the button and return the output signal to normal.

Plug each turntable's output cords into the appropriate PHONO jacks. Connect the turntable's ground wire to the GND terminal. (This normally produces minimum hum, but in some cases disconnecting the ground wire gives better results.)

## ■ CONNECTING A CD PLAYER

Connect a compact disc player to the CD jacks of the control amplifier. Connect L and R consistently between control amplifier and disc player.

## ■ CONNECTING A TUNER

Connect cords from the tuner's OUTPUT jacks to the TUNER jacks of the amplifier.

**OPERATIONS****■ CONNECTING AUDIO OUTPUTS OF A VIDEO RECORDER**

Connect the audio output of a video recorder to the VIDEO jack of the control amplifier.

**■ CONNECTING A TAPE DECK**

Two tape decks can be connected to this amplifier's two sets of jacks (TAPE 1 and TAPE 2). Connect the TAPE PB jacks to the tape deck's LINE OUT jacks, and the REC OUT jacks to the deck's LINE IN jacks.

**■ AC OUTLETS**

For your convenience, the unit provides 6 AC OUTLETS (5 switched and 1 unswitched) on the rear panel. The maximum power consumption accepted is: 5 SWITCHED outlets = 200 watts  
1 UNSWITCHED outlet = 800 watts

**■ TO LISTEN TO PROGRAM SOURCE**

1. Press the POWER switch.
2. Select the program source to be listened to with the input selectors.  
When the PHONO input is selected, set the PHONO selector according to the cartridge used.
3. Play the program source.
4. Adjust the VOLUME control and PARAMETRIC TONE CONTROLS.

**■ TO RECORD PROGRAM SOURCE**

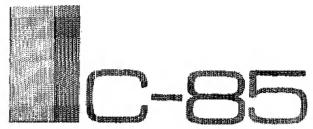
1. Press the POWER switch.
2. Select the program source to be recorded with the REC OUT selector.  
When PHONO input is selected, set the PHONO selector according to the cartridge used.
3. Play the program source to be recorded and set the tape deck connected to TAPE 1 and/or TAPE 2 jacks.
4. To listen to another source during recording, select the program source to be listened to with the input selector and play the program source.
5. Adjust the VOLUME control and PARAMETRIC TONE CONTROLS.  
The setting of these controls does not affect the recording sound.

**■ TO DUB TAPES**

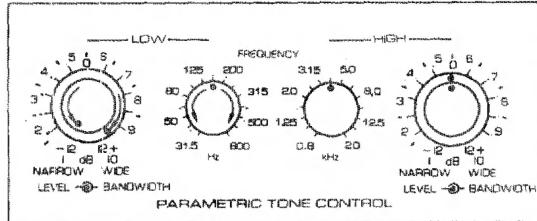
1. Press the POWER switch.
2. Set the REC OUT selector to TAPE COPY 1 ▶ 2 or 2 ▶ 1.  
When the REC OUT selector is set to TAPE COPY 1 ▶ 2, use the tape deck connected to TAPE 1 jacks to play and the tape deck connected to TAPE 2 jacks to record.  
When the REC OUT selector is set to TAPE COPY 2 ▶ 1, use the tape deck connected to TAPE 2 jacks to play and the tape deck connected to TAPE 1 jacks to record.
3. When the REC OUT selector is set to TAPE COPY 1 ▶ 2, use the tape deck connected to TAPE 1 jacks to play and the tape deck connected to TAPE 2 jacks to record.
4. To listen to another program source during dubbing, select the program source to be listened to with the input selector.
5. Adjust the VOLUME control and PARAMETRIC TONE CONTROLS.  
The setting of these controls does not affect the recording sound.

**■ PRACTICAL APPLICATIONS OF THE PARAMETRIC TONE CONTROLS**

The unit's PARAMETRIC TONE CONTROLS offer extensive control over tone quality. It can be used to adjust for room acoustics, speaker placement, or personal preferences. A LOW and a HIGH controls are provided, each with its own adjustable center frequency, bandwidth, and level (boost/cut).

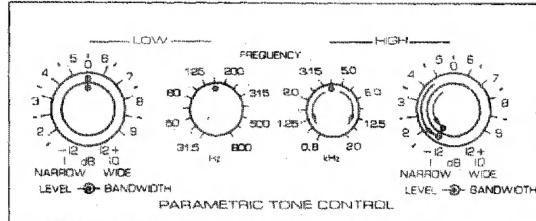


### • Compensating for Room Acoustics.



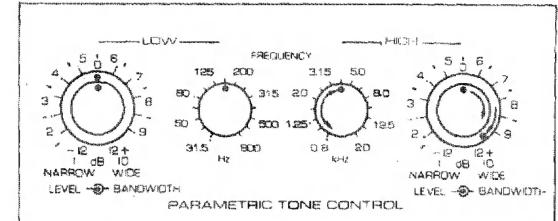
If a spectrum analyzer or sound level meter is available, you will be able to accurately flatten your listening room's acoustic response using the PARAMETRIC TONE CONTROLS. For example, if a response dip in the high frequency range (often due to sound absorption by carpet, drapes, stuffed furniture or even people) is detected, use the HIGH controls to create a corresponding response peak of equal but opposite BANDWIDTH and LEVEL. If appropriate test instruments are not available, however, rough compensation can be done by ear. For instance, if the bass range sounds too "boomy", indicating a low frequency peak, try setting the LOW range BANDWIDTH to WIDE and the LEVEL control to maximum cut, then sweep the FREQUENCY control through the bass range until you hear the boominess disappear. Then, finally, readjust the BANDWIDTH and LEVEL controls for the most natural overall sound.

### • Eliminating Noise or Hum.



If there is an annoying hum or noise during operation of your system, it can be effectively eliminated using the PARAMETRIC TONE CONTROLS. In the case of a high-frequency whine, for example, try setting the HIGH range BANDWIDTH to the maximum NARROW position and the LEVEL control to maximum cut, then sweep the FREQUENCY control through the high frequency range until you hear the interfering frequency noise disappear. Then, finally, readjust the BANDWIDTH and LEVEL controls for the most natural overall sound.

### • Tailoring the Sound.



The PARAMETRIC TONE CONTROLS can also be used to "shape" the sound to emphasize vocals, balance the tonal effect between varying instruments, or create any type of sound you like. Emphasizing the vocals, or mid-range presence, for example, can be done by setting the center FREQUENCY to between 1 kHz and 3 kHz, setting the BANDWIDTH control to the maximum WIDE position, and then boosting the LEVEL slightly. Conversely, vocals or midrange presence can be slightly attenuated by cutting the LEVEL slightly, thereby blending vocals into the background, facilitating conversation over the music or enhancing the background music effect.

**TROUBLESHOOTING**

Before assuming that your amplifier is faulty, check following troubleshooting list which details the corrective action you can take yourself without having to call a service engineer. If you have any doubts or questions, get in touch with your nearest YAMAHA dealer.

<b>Symptom</b>	<b>Possible cause</b>	<b>Remedy</b>
<b>Power is not supplied even when the POWER switch is turned on.</b>	• The power cord is not securely plugged in.	• Plug it in securely.
<b>No sound is heard.</b>	• Input selectors set incorrectly.	• Set input selector to source you want to hear.
	• The power amplifier is not connected correctly.	• Check and secure connections.
	• The input jacks are not connected securely.	• Connect them securely.
<b>One channel sounds stronger than the other.</b>	• The BALANCE control needs adjustment.	• Adjust the BALANCE control.
<b>Sound for MC cartridge is low.</b>	• The PHONO selector is set to an MM position.	• Set the switch to MC position.
<b>A loud humming sound is heard during record play.</b>	• Turntable's ground wire is not connected to amplifier's GND terminals.	• Connect the ground wire. (Sometimes better results can be obtained without grounding.)
<b>Unable to record.</b>	• REC OUT selector set improperly.	• Set REC OUT selector to source you are recording.
<b>Volume is too low even when the VOLUME control is turned up.</b>	• The AUDIO MUTING switch is on.	• Turn the AUDIO MUTING switch off.

## SPECIFICATIONS

### **Input Sensitivity/Impedance**

<b>Phono 1 MC</b>	100 $\mu$ V/100 ohms
<b>MM</b>	2.5 mV/100 ohms, 47 k-ohms (220, 330 pF)

<b>Phono 2 MM</b>	2.5 mV/47 k-ohms (220 pF)
<b>CD, Video, Tape, Tuner</b>	150 mV/47 k-ohms

### **Input Sensitivity (New IHF)**

<b>Phono MC</b>	33 $\mu$ V
<b>Phono MM</b>	0.83 mV
<b>CD, Video, Tape, Tuner</b>	50 mV

### **Max. Input Signal (1,000 Hz, 0.01% THD)**

<b>Phono MC</b>	20 mV
<b>Phono MM</b>	500 mV

### **Output Level/Impedance**

<b>Pre Out</b>	1.5V/47 ohms
<b>Rec Out</b>	150 mV/600 ohms

<b>Max. Voltage Output (20 ~ 20,000 Hz, 1% THD)</b>	
<b>Pre Out</b>	8.5V

### **Headphone jack**

<b>Rated Output/Impedance</b>	6V/100 ohms
(0.01% THD, 1,000 Hz)	

### **THD (20 to 20,000 Hz)**

<b>Phono MC to Rec Out, 3V</b>	0.001%
<b>Phono MM to Rec Out, 3V</b>	0.001%
<b>CD, Video, Tape, Tuner to</b>	

<b>Pre Out, 3V</b>	0.001%
(Tone Bypass ON)	

### **Intermodulation Distortion**

<b>CD, Video, Tape, Tuner</b>	0.002%
(5V Output, Tone Bypass ON)	

### **Frequency Response (Tone Bypass ON)**

<b>CD, Video, Tape, Tuner</b>	+0, -0.2 dB (20 to 20,000 Hz)
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### **RIAA Equalization Deviation**

<b>Phono MC, MM</b>	20 to 20,000 Hz $\pm$ 0.2 dB
<b>Phono MC, MM</b>	10 to 100,000 Hz $\pm$ 0.5 dB

### **Signal to Noise Ratio (IHF A Network)**

<b>Phono MC (500 <math>\mu</math>V Input Shorted)</b>	91 dB
<b>Phono MM (5.0 mV Input Shorted)</b>	95 dB

<b>CD, Video, Tape, Tuner</b>	
(150 mV Input Shorted,	

<b>Tone Bypass ON)</b>	106 dB
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### **Signal to Noise Ratio (New IHF)**

<b>Phono MC</b>	80 dB
<b>Phono MM</b>	83 dB

<b>CD, Video Tape, Tuner</b>	103 dB
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### **Channel Separation**

<b>Phono MM (Input shorted)</b>	
<b>40 Hz</b>	85 dB

<b>1,000 Hz</b>	80 dB
<b>10,000 Hz</b>	70 dB

<b>Video, Tape (5.1 k-ohms)</b>	
<b>40 Hz</b>	85 dB

<b>1,000 Hz</b>	70 dB
<b>10,000 Hz</b>	50 dB

### **Parametric Tone Controls**

<b>Frequency LOW</b>	31.5 ~ 800 Hz
<b>HIGH</b>	800 ~ 20,000 Hz

<b>Level LOW, HIGH</b>	$\pm$ 12 dB
<b>Bandwidth LOW, HIGH</b>	Q: 0.3 ~ 3.0

### **Filter Characteristics**

<b>Subsonic</b>	15 Hz, $-12$ dB/oct
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### **Continuous Loudness Control (Level-related equalization)**

<b>Attenuation</b>	40 dB (1,000 Hz)
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<b>Audio Muting</b>	-20 dB
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<b>Gain tracking error (0 ~ -60 dB)</b>	2 dB
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<b>Power Supply</b>	120V, 60 Hz
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<b>Power Consumption</b>	30W
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<b>AC outlet</b>	
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<b>Switched x 5</b>	200W max.
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<b>Unswitched x 1</b>	800W max.
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<b>Dimensions (W x H x D)</b>	435 x 95 x 380 mm (17-1/8 x 3-3/4 x 14-15/16 in.)
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<b>Weight</b>	6.8 kg (15 lbs.)
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Specifications subject to change without notice.